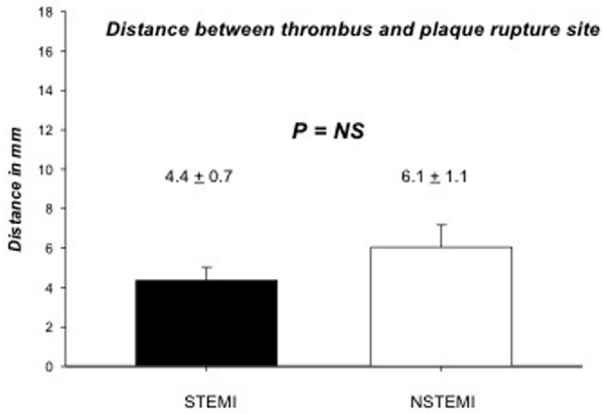
Results: Analysis of coverage revealed an important impact of baseline strut-wall ISA distance on the risk of incomplete strut coverage at follow-up. Malapposed segments with an ISA detachment < 100 µm at baseline showed complete strut coverage at follow-up whereas segments with a maximal ISA detachment distance of 100-300 µm and >300 µm had 6.1 % and 15.7% of their struts still uncovered at follow-up respectively ($p < 0.001$).
Conclusions: Flow disturbances and risk of delayed strut coverage both increase with ISA detachment distance. Insights from this study are important for understanding malapposition as a quantitative, rather than binary phenomenon (present or absent), and to define the threshold of ISA detachment that might benefit from optimization during stent implantation.

TCT-366

Thrombus Downstream From Plaque Rupture Site in Acute Myocardial Infarction Identified On Optical Coherence Tomography

Hyon-he Garza[1], Elisa McDaniel[1], Huu Tam Truong[1], Tam Nguyen[1], Amani Morgan Mikail[2], Hoang Thai[2]
[1]University of Arizona, Tucson, AZ, [2]Southern Arizona VA Healthcare System, Tucson, AZ

Background: Rupture of atherosclerotic plaque and resulting thrombosis is the basis for acute coronary syndrome (ACS). Standard arteriography is commonly used to guide percutaneous treatment of ACS but it has limited ability to detect thrombus or plaque rupture site. Intravascular ultrasound (IVUS) has improved capabilities to detect these lesions. However, optical coherence tomography (OCT) is more sensitive than IVUS in detecting thrombus and plaque rupture site which can potentially improve stent positioning.
Methods: Retrospective review of OCT images in 46 patients who presented with ST-elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI) was performed. The plaque rupture site and thrombus were identified and the distance from the two were measured.
Results: Plaque rupture site was identified in 80% of cases. Thrombus was identified in 89% of STEMI cases and 67% of NSTEMI cases (n=0.09). One patient had the thrombus upstream, one patient had it at the rupture site, and the remaining 44 patients had it downstream to the plaque rupture site. Mean distance between the thrombus and plaque rupture site is shown in graph.



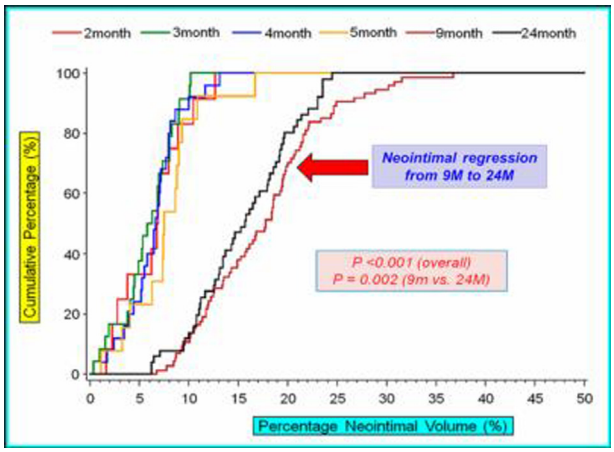
Conclusions: OCT has good sensitivity in identifying plaque rupture site and thrombus in patients with STEMI and NSTEMI. The mean distance between the plaque rupture site and the thrombus was 5.1 mm suggesting that using standard arteriography to guide stenting may lead to suboptimal treatment since the stent can cover the thrombotic site but miss the plaque rupture site that remains thrombogenic.

TCT-367

2-Year Sequential OCT Follow-up Findings and 3-Year Clinical Outcomes of the New Dual Therapy Endothelial Progenitor Cell Capturing Sirolimus-eluting COMBO Stent: The EGO-COMBO Study

Stephen Wai Luen LEE[1], Simon CC. LAM[1], Shun Ling Kong[1], Kelvin Ki Wan Chan[1], Chor Cheung Frankie Tam[1], Michael Ka Lam Wong[1], Anthony Yiu Tung Wong[1], Arthur See Yue Yung[1], Catherine P. SHEA[1], Li-Wei ZHANG[1], Karl K. WU[1], Michael Haude[2], Gary S. Mintz[3], Roxana Mehran[4], Akiko Maehara[5]
[1]Queen Mary Hospital, The University of Hong Kong, Hong Kong, Hong Kong, [2]Städtische Kliniken Neuss, Lukaskrankenhaus GmbH, Neuss, Germany, [3]Cardiovascular Research Foundation, Washington, United States, [4]Mount Sinai Hospital, New York, United States, [5]Cardiovascular Reserach Foundation and Columbia University Medical Center, New York, United States

Background: The benefits of the first available "dual" therapy approach endothelial-progenitor-cell capturing sirolimus-eluting stent (COMBO Stent, OrbusNeich Medical, FL, USA) were studied.
Methods: Using 4 longitudinal sequential OCTs in this prospective, single center study, 61 patients treated by COMBO Stent had baseline OCT (for optimal stent apposition), at early FUs (4 monthly groups in 1:2:2:1 ratio from 2nd to 5th month for healing profile [% strut coverage] using 6 Categories), at 9M (for neointima), and a final 24M OCT (for late loss outcomes). Clinical event adjudication, angiographic and OCT analyses were performed by CRF core laboratory.
Results: 61 patients (33% DM) with 74 lesions received 88 COMBO stents. Early strut coverage (OCT Cat. D to F) increased from 77, 86.9, 90.7, to 92.5%; interpolated 100% coverage at 150 days. 9M OCT FU Rate was 100% & TLR at 1.64%. 24M OCT FU Rate was 68.3%; at 38M (Clinical FU Rate 98.3%) MACE Rate was 3.28%. From 9 to 24 months, neointima regression by OCT was observed:- (Mixed Model, Median, IQR) neointimal thickness (mm) 0.14 [0.08, 0.21] vs 0.12 [0.07, 0.19], p< 0.001; neointimal volume (mm3) 29.91 [22.13-43.22] vs 26.17 [19.94-35.81], p=0.003; & in-stent % plaque volume (%) 17.76 [12.21-21.22] vs 15.65 [11.17-19.35], p=0.011. No neoatherosclerosis or ARC definite or probable LST recorded.
Conclusions: This OCT Study demonstrates the benefits of the "dual" therapy DES approach, with excellent pro-healing profile established translating into durable outcomes of neointimal suppression (even 24M regression, for the first time in a DES) without late stent failure.



TCT-368

Preclinical validation of light intensity analysis on Optical Coherence tomography to monitor bioresorption and integration process after implantation of a bioresorbable scaffold in porcine model: a comparison between OCT and Histology

Shimpei Nakatani[1], LAURA E. Perkins[2], YUKI ISHIBASHI[3], Richard Rapoza[4], Yoshinobu Onuma[5], Patrick W. Serruys[6]
[1]ThoraxCenter, Erasmus Medical Center, Rotterdam, Netherlands, [2]Abbott Vascular, Mattaponi, VA, [3]Thoraxcenter, Erasmus University Medical Center, Rotterdam, the Netherlands, Rotterdam, Netherlands, [4]Abbott, Santa Clara, CA, [5]Thorax Center, Erasmus University, Rotterdam, Netherlands, [6]Imperial College London, London, Netherlands

Background: After implantation of an everolimus-eluting poly-l-lactic-acid scaffold (Absorb BVS, Abbott Vascular, Santa Clara, CA), the strut is progressively hydrolyzed and integrated into the arterial wall. The quantitative light intensity analysis of the strut core on Optical Coherence Tomography (OCT) enables us to assess the light reflectivity of the resorbing polymer and its vessel wall integration. The aim of this study was to compare this quantitative method with histology in porcine model.
Methods: Seventy-six BVS were implanted in 51 pigs that underwent OCT and were then euthanized at 3, 6, 12, 18, 24, 30 and 36 months after implantation. On OCT, the median light intensity value of strut was calculated by dedicated software, which was normalized by the intensity value of inter-strut neointima. On histology, integration grade of the corresponding struts was classified into 5 groups according to the connective tissue composition.
Results: A total of 275 struts were analyzed. The normalized light intensity value (NLIV) increased steadily over time except between 12 and 18 months. (0.15 [0.12-0.20] at 6M, 0.19 [0.15-0.25] at 12M, 0.20 [0.15-0.25] at 18M, 0.23 [0.18-0.32] at 24M, 0.32 [0.24-0.44] at 30M, and 0.52 [0.35-0.76] at 36M). As the integration grade progresses in histology, NLIV increased gradually (Figure).
Conclusions: The OCT NLIV might be valuable for monitoring the integration process of polymeric bioresorbable scaffolds. Histological and imaging analysis at 42 and 48 months are ongoing. The full results will be shown at the time of the meeting.